

CLAIMS

1. A valve comprising:

a valve body having an elongate fluid passageway defining an inlet and an outlet at its respective ends;

5 an outlet valve head being slidably disposed within the fluid passageway for closure of the outlet, the outlet valve head being arranged for hydraulic actuation; and

a biasing element being operatively coupled to the outlet valve head to urge it out of sealing engagement with the outlet to permit the flow of fluid through the valve in its normally open configuration.

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2. A valve as claimed in claim 1 wherein the outlet valve head is connected to a piston which is slidably received within a piston chamber of a piston housing mounted within the valve body.
3. A valve as claimed in claim 2 wherein the biasing element is located within the piston chamber and arranged to urge the piston away from the outlet and the outlet valve head out of the sealing engagement with the outlet wherein the valve is in the normally open configuration to allow the flow of fluid therethrough.
- 15 4. A valve as claimed in claim 2 or claim 3 wherein the piston chamber includes a hydraulic chamber being arranged so that hydraulic fluid pressure applied to the hydraulic chamber drives the piston toward the outlet and the outlet head into sealing engagement with the outlet to close the valve.
- 20 5. A valve as claimed in any one of claims 1 to 4 also comprising an inlet valve head slidably disposed within the fluid passageway for closure of the inlet.
6. A valve as claimed in claim 5 wherein the inlet valve head is in the form of a receiver poppet which is slidably received within a poppet chamber of a poppet housing mounted within the valve body.
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7. A valve as claimed in claim 6 further comprising a poppet biasing element located within the poppet chamber and arranged to urge the receiver poppet toward and into sealing engagement with the inlet.
8. A fluid level control system comprising:
- 5 a level sensor being adapted to mount to a vessel for sensing the level of its fluid contents;
- a valve being adapted to connect to the vessel and hydraulically coupled to the level sensor to control the flow of fluid to the vessel, the valve including a valve body having an elongate fluid passageway defining an inlet and an outlet at its
- 10 respective ends; and
- an outlet valve head being slidably disposed within the fluid passageway for closure of the outlet, the valve being of a normally open configuration wherein the outlet valve head is urged out of sealing engagement with the outlet to permit the flow of fluid through the valve whilst the fluid level is below a predetermined
- 15 level to permit the flow of fluid to the vessel whereas at or above the predetermined level the level sensor hydraulically actuates the outlet head to effect closure of the valve to at least restrict the flow of fluid to the vessel.
9. A fluid level control system as claimed in claim 8 further comprising an inlet valve head being slidably and axially disposed within the passageway for closure of the
- 20 inlet.
10. A fluid level control system as claimed in either of claims 8 or 9 arranged for use in conjunction with a refuelling nozzle.
11. A fluid level control system as claimed in claim 10 wherein the refuelling nozzle is of a dry break configuration and designed to engage the inlet valve head to effect
- 25 its opening.
12. A fluid level sensor comprising:
- a float device being adapted to locate within a vessel for sensing the level of its fluid contents; and

- 5 a level sensor valve being coupled to or arranged to engage the float device, the level sensor valve being adapted to couple to a valve and the float device being arranged to move said sensor valve into a first position at a predetermined level of fluid within the vessel whereby the sensor valve permits the flow of a hydraulic fluid to the valve to effect its closure.
13. A fluid level sensor as claimed in claim 12 wherein the level sensor valve includes a sensor body having a recess within which a spool is slidably housed, the spool being operatively coupled to or arranged to engage the float device via a connecting rod.
- 10 14. A fluid level sensor as claimed in claim 13 wherein the sensor body includes a hydraulic flow passage which, with the fluid level at or above the predetermined level and the level sensor valve in the first position, cooperates with the recess in order to permit the flow of hydraulic fluid to the valve whereas in a second position the spool prevents the flow of hydraulic fluid to the valve whilst the fluid level in the vessel is below the predetermined level.
- 15 15. A fluid level sensor as claimed in claim 14 wherein the body of the valve includes a sampling port operatively coupled to the level sensor valve to provide hydraulic fluid to said level sensor and with the level sensor valve in the first position, to redirect it to a hydraulic chamber of the valve.
- 20 16. A fluid level sensor as claimed in claim 15 wherein the sampling port is connected to an inlet of the hydraulic flow passage of the sensor body via a sampling flow line which includes an in-line strainer, check valve and/or pressure accumulator.
17. A fluid level sensor as claimed in any one of claims 14-16 further comprising a first hydraulic return line connected between a first outlet of the hydraulic flow passage and the hydraulic chamber of the valve.
- 25 18. A fluid level sensor as claimed in any one of claims 12-17 wherein the hydraulic fluid is the fluid of the vessel.
19. A fluid level sensor as claimed in claim 18 further comprising a float chamber within which the float device is located, the float chamber arranged to be flooded by the vessel fluid at the predetermined level.
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20. A fluid level sensor as claimed in claim 19 wherein the float chamber includes one or more apertures about its peripheral wall and which permit flooding of the chamber which includes a non-return valve in its base which permits flow out of the chamber only.
- 5 21. A fluid level sensor as claimed in any one of claims 15-20 wherein the piston housing of the valve body includes a hydraulic inlet to which the level sensor valve is operatively coupled, the hydraulic inlet being arranged, with the level sensor valve in the second position, to provide hydraulic fluid pressure to the piston on an opposite face to the hydraulic chamber whereby the hydraulic fluid
10 assists a biasing element in retaining the valve in a normally open mode.
22. A fluid level sensor as claimed in claim 21 wherein the hydraulic inlet is coupled to a second outlet of the hydraulic flow passage via a second hydraulic return line.
23. A fluid level sensor as claimed in claim 22 wherein the spool of the level sensor valve includes a throughgoing passage which, with said sensor valve in the
15 second position, cooperates with the hydraulic flow passage to provide hydraulic fluid to the second outlet only and thus hydraulic fluid to the opposite face of the piston.
24. A fluid level sensor as claimed in any one of claims 21-23 wherein the piston housing includes another hydraulic inlet to which the sensor valve is operatively
20 coupled and being arranged to provide hydraulic fluid pressure to the piston to assist the biasing element in retaining the valve in its open configuration.